

AMENDMENT TO THE CLAIMS

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Currently amended) A solid state device for determining the concentration of oxygen in a gas phase,

the solid state device comprising:

a solid electrolyte;

a reference electrode coupled to a surface of the solid electrolyte and being exposed to a gas with a known partial pressure of oxygen; and

a working electrode including a mixed ion/electron conductor constructed from a ceria solid solution doped with at least one mixed valency element chosen from the ceria-containing flourite group of materials, wherein the working electrode is coupled to the same surface of the solid electrolyte as the reference electrode.

24. (Original) The device of claim 23 wherein the solid electrolyte is selected from the group consisting of doped zirconia and ceria.

25. (Currently Amended) The device of claim 23 wherein the reference electrode is constructed from ~~the group consisting of platinum, a metal oxide electrode, and a mixed conducting electrode.~~

26. (Original) The device of claim 25 wherein the metal oxide electrode includes perovskite structure.

27. (Original) The device of claim 25 wherein the metal oxide electrode includes oxide with fluorite structure.

28. (Cancelled)

29. (Currently Amended) The device of claim 2328 wherein the mixed valency element is one of terbium and praseodymium.

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Canceled)

35. (Canceled)

36. (Canceled)